

**WHAT IS CLAIMED IS:**

1. An artificial salivary gland, comprising:

a support having an open end, a closed end and a surface, wherein the support is made of a water porous material; and

a layer of cells disposed on the surface of the support, wherein the cells produce a water transport protein.

2. An artificial salivary gland, comprising:

a water porous support having an open end, a closed end and a surface; and

a layer of epithelial cells disposed on the surface of the support transduced with a water transport gene, wherein the water transport gene produces a water transport protein.

3. An artificial salivary gland, comprising:

an open ended support having an interior surface; and

a monolayer of cells, which express a water channel protein, disposed on the interior surface.

4. An artificial salivary gland, comprising:

a water-porous support having an interior surface; and

cells, which express a water channel protein, disposed in a polarized monolayer on the interior surface.

5. An artificial salivary gland, comprising:

a water-permeable support having an open end, a closed end, and an interior surface coated with an attachment surface that promotes a polarized monolayer formation; and cells, engineered to secrete water unidirectionally, disposed in a polarized monolayer on the interior surface.

6. The artificial salivary gland of any of Claims 1, 2, 3, 4 or 5 wherein the cells additionally produce an ion-transport protein.

7. The artificial salivary gland of any of Claims 1, 2, 3, 4 or 5 wherein the cells additionally produce a transgene product secreted in an endocrine or exocrine manner.